

What is claimed is:

1. An isolated DNA or RNA molecule comprising at least ten contiguous bases having a sequence in a pancreatic islet microRNA shown in SEQ ID NOs:1-20, except that up to thirty percent of the bases may be wobble bases, and up to 10% of the contiguous bases may be non-complementary.
2. An isolated molecule according to claim 1, further comprising a sequence of bases at the 5' end and/or a sequence of bases at the 3' end present in any one of the hairpin precursor sequences shown in SEQ ID NOs:21-40 or any fragment thereof.
3. An isolated molecule according to claim 2, wherein the hairpin precursor sequence is the sequence in which the pancreatic islet microRNA is present.
4. An isolated molecule according to claim 1, wherein the pancreatic islet microRNA is incorporated into a vector.
5. An isolated molecule according to claim 1, wherein the isolated molecule is a DNA molecule.
6. An isolated molecule according to claim 1, wherein the isolated molecule is a RNA molecule.
7. An isolated molecule according to claim 1, wherein the isolated molecule further comprises a cap.
8. An isolated molecule according to claim 7, wherein the cap is an inverted nucleotide cap.
9. An isolated molecule according to claim 7, wherein the cap is a chemical cap.
10. An isolated molecule according to claim 1, wherein the isolated molecule consists essentially of any one of the sequences of the pancreatic islet microRNA shown in SEQ ID NOs:1-20.

11. An isolated molecule according to claim 1, wherein the isolated molecule consists essentially of any one of the sequences shown in SEQ ID NOs:21-40.

12. A modified single stranded pancreatic islet microRNA molecule comprising a minimum of ten moieties and a maximum of fifty moieties on a molecular backbone, the molecular backbone comprising backbone units, each moiety comprising a base bonded to a backbone unit wherein:

at least ten contiguous bases have the same sequence as a contiguous sequence of bases in a pancreatic islet microRNA molecule shown in SEQ ID NOs:1-20, except that up to thirty percent of the bases pairs may be wobble base pairs, and up to 10% of the contiguous bases may be additions, deletions, mismatches, or combinations thereof;

no more than fifty percent of the contiguous moieties contain deoxyribonucleotide backbone units, and

at least one moiety is not an unmodified deoxyribonucleotide moiety or an unmodified ribonucleotide moiety.

13. A molecule according to claim 12, further comprising a sequence of bases at the 5' end and/or a sequence of bases at the 3' end present in any one of the hairpin precursor sequences shown in SEQ ID NOs:21-40 or any fragment thereof.

14. A molecule according to claim 13, wherein the hairpin precursor sequence is the sequence in which the pancreatic islet microRNA is present.

15. A molecule according to claim 12, wherein the pancreatic islet is a mammalian pancreatic islet.

16. A molecules according to claim 15, wherein the mammal is a human.

17. A molecule according to claim 12, wherein the molecule is modified for increased nuclease resistance.

18. An isolated single stranded anti-pancreatic islet microRNA molecule comprising a minimum of ten moieties and a maximum of fifty moieties on a molecular backbone, the molecular backbone comprising backbone units, each moiety comprising a base bonded to a backbone unit, each base forming a Watson-Crick base pair with a complementary base wherein:

at least ten contiguous bases have a sequence complementary to a contiguous sequence of bases in any one of the pancreatic islet microRNA molecules shown in SEQ ID NOs; 1-20, except that up to thirty percent of the base pairs may be wobble base pairs, and up to 10% of the contiguous bases may be additions, deletions, mismatches, or combinations thereof;

no more than fifty percent of the contiguous moieties contain deoxyribonucleotide backbone units; and

the molecule is capable of inhibiting microRNP activity.

19. A molecule according to claim 18, wherein the moiety at the position corresponding to position 11 of the microRNA is non-complementary.

20. A molecule according to claim 18, wherein up to 5% of the contiguous moieties may be non-complementary to the contiguous sequence of bases in the pancreatic islet microRNA.

21. A molecule according to claim 20, wherein non-complementary moieties are additions, deletions, mismatches, or combinations thereof.

22. A molecule according to claim 18 having any one of the anti-pancreatic islet microRNA sequence shown SEQ ID NOs:41-60.

23. A molecule according to claim 18, wherein at least one of the moieties is a modified deoxyribonucleotide moiety.

24. A molecule according to claim 23 wherein the modified deoxyribonucleotide is a phosphorothioate deoxyribonucleotide moiety.

25. A molecule according to claim 23, wherein the modified deoxyribonucleotide is N'3-N'5 phosphoroamidate deoxyribonucleotide moiety.

26. A molecule according to claim 18, wherein at least one of the moieties is a modified ribonucleotide moiety.
27. A molecule according to claim 26, wherein the modified ribonucleotide is substituted at the 2' position.
28. A molecule according to claim 27, wherein the substituent at the 2' position is a C₁ to C₄ alkyl group.
29. A molecule according to claim 28, wherein the alkyl group is methyl.
30. A molecule according to claim 28, wherein the alkyl group is allyl.
31. A molecule according to claim 27, wherein the substituent at the 2' position is a C₁ to C₄ alkoxy - C₁ to C₄ alkyl group.
32. A molecule according to claim 31, wherein the C₁ to C₄ alkoxy - C₁ to C₄ alkyl group is methoxyethyl.
33. A molecule according to claim 26, wherein the modified ribonucleotide has a methylene bridge between the 2'-oxygen atom and the 4'-carbon atom.
34. A molecule according to claim 18, wherein at least one of the moieties is a peptide nucleic acid moiety.
35. A molecule according to claim 18, wherein at least one of the moieties is a 2'-fluororibonucleotide moiety.
36. A molecule according to claim 18, wherein at least one of the moieties is a morpholino phosphoroamidate nucleotide moiety.
37. A molecule according to claim 18, wherein at least one of the moieties is a tricyclo nucleotide moiety.
38. A molecule according to claim 18, wherein at least one of the moieties is a cyclohexene nucleotide moiety.

39. A molecule according to claim 18, wherein the molecule is a chimeric molecule.
40. A molecule according to claim 18, wherein the molecule comprises at least one modified moiety for increased nuclease resistance.
41. A molecule according to claim 40, wherein the nuclease is an exonuclease.
42. A molecule according to claim 41, wherein the molecule comprises at least one modified moiety at the 5' end.
43. A molecule according to claim 41, wherein the molecule comprises at least two modified moieties at the 5' end.
44. A molecule according to claim 41, wherein the molecule comprises at least one modified moiety at the 3' end.
45. A molecule according to claim 41, wherein the molecule comprises at least two modified moieties at the 3' end.
46. A molecule according to claim 41, wherein the molecule comprises at least one modified moiety at the 5' end and at least one modified moiety at the 3' end.
47. A molecule according to claim 41, wherein the molecule comprises at least two modified moieties at the 5' end and at least two modified moieties at the 3' end.
48. A molecule according to claim 41, wherein the molecule comprises a cap at the 5' end, the 3' end, or both ends of the molecule.
49. A molecule according to claim 48, wherein the molecule comprises a chemical cap.
50. A molecule according to claim 48, wherein the molecule comprises an inverted nucleotide cap.
51. A molecule according to claim 18, wherein the nuclease is an endonuclease.
52. A molecule according to claim 51, wherein the molecule comprises at least one modified moiety between the 5' and 3' end.

53. A molecule according to claim 51, wherein the molecule comprises a chemical cap between the 5' end and 3' end.
54. A molecule according to claim 18, wherein all of the moieties are nuclease resistant.
55. A method for inhibiting microRNP activity in a cell, the microRNP comprising a pancreatic islet microRNA molecule, the method comprising introducing into the cell a single-stranded anti-pancreatic islet microRNA molecule according to claim 18, wherein the anti-pancreatic islet microRNA is complementary to the pancreatic islet microRNA molecule.
56. A method according to claim 55, the moiety in the anti-pancreatic islet microRNA molecule at the position corresponding to position 11 of the microRNA is non-complementary
57. A method according to claim 55, wherein the pancreatic islet is a mammalian pancreatic islet.
58. A method according to claim 57, wherein the mammal is a human.
59. A method for treating diabetes in a mammal in need thereof, the method comprising introducing into the mammal an effective amount of an anti-pancreatic islet microRNA molecule having at least ten contiguous bases having a sequence shown in SEQ ID NOs:41 or 51.
60. An isolated microRNP comprising an isolated DNA or RNA molecule according to claim 1
61. An isolated microRNP comprising an isolated single stranded pancreatic islet microRNA molecule according to claim 12.